

Work Order ID 163298

Tuesday, June 27, 2017 12:03:48 PM

163298

Page 1

Item ID: 646.9710

Revision ID:

Item Name: Body

Start Date: 7/4/2017 Start Qty: 10.00

Required Date: 7/21/2017 Req'd Qty: 10.00

Reference:

Accept

N900040100Setup Start ***NS1***Stop ***NS2***

Cust Item ID:

Customer:

Approvals:

Process Plan:

DAS

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

21

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
646.9700	D2

100

0.00

100

BAND SAW

Bandsaw

Memo

0.08

Jeaspa Bandsaw

Cut Blank at 7.425"

10 _____ SC-17/07/08

110

2.29

110

HAAS CNC VERTICAL MACHINING #1

HAAS 1

Memo

2.62

HAAS CNC vertical machine #1.

1-Machine per folio FB130

DWG REV: D2FOLIO REV: 3

2- deburr and break all sharp edges

10 X X SC-17/07/10

DAS
21
9-89DAS
14
9-89

DOA:

Date:

17-0-31
OCT - 5 2017

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed:

Date:

Work Order update only ☐

Work Order: <u>163 298</u> Part No. <u>646-9710</u> NCR No. <u>17-6640</u>	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒ Suspected Unapproved ☒	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☒ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date: <u>17/07/10</u>	Step #: <u>1</u>	QTY Effective: <u>1</u>		MRB (QSI042) Approval DAS 9 17-07-17 9-89 as per email	
Description Work Order Deviation		Disposition		Completed By SC 17-07-17 Lead hand / Supervisor Approval Verification and 17/07/10 QC / QA Coordinator Approval DAS 9 17-07-17	
0.352" groove are off center Piece moved while grooving Part is accepted		Piece moved while grooving changed inserts on woodruff tool and used mitre jaws and replaced part found acceptable as per email			
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☒ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ ☒ Centre Not Concentric Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER :					

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Page 2

Item ID: 646.9710 Accept ***N900040100*** Setup Start ***NS1***
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Required Date: 7/21/2017 Req'd Qty: 10.00 ***10*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120 *120* QC Quality Control	QC2- Inspect parts off machine FAI/FAIB Memo	0.00 0.10				10	X		S.C. 17/07/10 DAS 14 9-89
130 *130* QC Quality Control	QC8- Inspect parts - second check Memo	0.00 0.20				10			17/07/11 DAS 49 9-89
140 *140* Outsource4 Outsource process - Anodize	Outsource process-Anodize per QSI017 4.1.10.1 Memo Issue P/O to ATG : 2723 HARD ANODIZE COLOR BLACK, PER IAW MIL-A-8625 TYPE 3 CLASS 2 AS PER MPP-172 SECTION 4.2, Certification of Comformity is required	0.00 1,800.00				11	W		2008 2017/07/27

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																													
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Root Cause		FAULT CATEGORY																																																															
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	Past Expiry Date ☐	Manufacturing Process ☐	OTHER :			
Misidentified ☐	Past Due ☐																																																																

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Required Date: 7/21/2017 Req'd Qty: 10.00

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Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

150

Receive & Inspect for Damage & Mat'l Certs

0.00

150

Packaging

Memo

0.20

Packaging

1/ **DAS**
6
9-89 **AUG 1 9 2017**

155

QC5- Inspect part completeness to step on W/O

0.00

155

QC

Memo

0.20

Quality Control

1.5 mils thickness primer1/ **DAS**
38
9-89 **AUG 22 2017**

160

0.00

160

SprayPaint

Memo

0.00

Spray Painting

-PRIME CARDINAL 7760-4702 LOW VOC EPOXY PRIMER (LIGHT GRAY)**1/ A** **DAS**
38
9-89

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																													
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
165 *165* QC Quality Control	QC14- Inspect Spray Paint Memo <i>N/A</i> <i>DAS 32 9-89</i>	0.00 0.00							
180 *180* Packaging Packaging	Identify as per dwg & Stock Location: <i>CCK012</i> Memo <i>DAS 6 9-89</i> ***IDENTIFY AS PER APICAL MPP-120 BY STAMPING P# AND REV***	0.00 0.10				<i>10</i>	<i>AUG 22 2017</i>	<i>W</i>	
190 *190* QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 1.00						<i>17/9/16</i>	<i>JS</i>

DAS 21 9-89

AUG 31 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐								
Misidentified ☐	Past Due ☐								
		OTHER :							

Picklist Print

Tuesday, June 27, 2017 12:03:46 PM

Page 1

Work Order ID: 163298

163298

Parent Item: 646.9710

646 9710

Parent Item Name: Body

Start Date: 7/4/2017

Required Date: 7/21/2017

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP REV:A NEW ISSUE 12/10/04 JFS VERIFY BY: DD IPP Rev.B
17.06.14 Primer to be done in house DP Verify DD IPP Rev.C 17.06.27
Change Mat. as per ECN17-574 DP verify DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
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M7075T65.000X1.000

Purchased

No

100

f

0.0000

6.526316

M7075T65 000X1 000

**

10

+1

7075-T6 BAR 5.000" X 1.000"

1.000 x 5.000

M137781

(Material not listed)
SC. 17/07/08

17-7-4

DAS
03
9-89

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐							
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval			
Description Work Order Deviation				Disposition				Completed By 3AL BO 18.0 Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval			
Root Cause		FAULT CATEGORY									
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐
Past Expiry Date ☐	Manufacturing Process ☐	OTHER :									
Misidentified ☐	Past Due ☐										

DART AEROSPACE LTD	Work Order:	163298
Description: Body	Part Number:	646.9710
Inspection Dwg: 646.9700 Rev: D2		Page 1 of 2

INSPECTION SHEET

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
0.13 x 45°	+/-0.010 x 0.5°	0.13 x 45°	✓		Visual	
1.500	+/-0.005	1.502	✓		U	
0.352	+0.005/-0.000	0.352	✓		U	
0.10 x 45°	+/-0.010 x 0.5°	0.10 x 45°	✓		U	
0.875	+/-0.005	0.876	✓		U	
0.700	+/-0.005	0.700	✓		U	
5.500	+/-0.005	5.501	✓		Visual	
0.660	+/-0.005	0.660	✓		HG	
0.660	+/-0.005	0.660	✓		HG	
0.278	+/-0.002	0.279	✓		HG + GP	
0.339	+/-0.002	0.340	✓		HG + GP	
0.352	+/-0.002	0.352	✓		HG + GP	
0.372	+/-0.002	0.373	✓		HG + GP	
1.067	+/-0.002	1.068	✓		HG + GP	
2.608	+/-0.002	2.609	✓		HG + GP	
2.750	+/-0.002	2.751	✓		HG + GP	
2.892	+/-0.002	2.892	✓		HG + GP	
3.348	+/-0.002	3.349	✓		HG + GP	
3.597	+/-0.002	3.597	✓		HG + GP	
3.847	+/-0.002	3.848	✓		HG + GP	
0.351	+/-0.002	0.352	✓		HG + GP	
0.544	+/-0.002	0.545	✓		HG + GP	
2.195	+/-0.002	2.196	✓		HG + GP	
2.304	+/-0.002	2.305	✓		HG + GP	
2.451	+/-0.002	2.451	✓		HG + GP	
2.639	+/-0.002	2.640	✓		HG + GP	
3.395	+/-0.002	3.395	✓		HG + GP	
3.495	+/-0.002	3.496	✓		HG + GP	
4.551	+/-0.002	4.551	✓		HG + GP	
4.595	+/-0.002	4.596	✓		HG + GP	
4.687	+/-0.002	4.688	✓		HG + GP	
4.734	+/-0.002	4.735	✓		HG + GP	
6.651	+/-0.002	6.651	✓		HG + GP	
Ø0.201	+0.005/-0.001	0.202	✓		Visual	

DART AEROSPACE LTD		Work Order: 163298
Description: Body		Part Number: 646.9710
Inspection Dwg: 646.9700 Rev: D2		Page 2 of 2

INSPECTION SHEET

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Ø0.177	+0.005/-0.001	0.178	✓		DevCNC02	
7.026	+/-0.005	7.029	✓		W	
4.245	+/-0.005	4.241	✓		W	

DAS
49
9-89

Measured by: S.C. / 17/07/09	Checked by: [Signature]	QC Inspector:
Date: 17/07/09	Date: 17/07/11	Date:

Engineering Approval: (If necessary)	Date:
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Rev	Date	Change	Revised by	Approved
A	13.06.03	New Issue	KJ	
B	13.07.18	Dwg Rev updated	KJ	
C	14.01.21	Dwg Rev updated	KJ	
D	16.05.27	Dimensions updated per Dwg Rev D2	KJ	
E	16.08.29	Dimensions 0.487 & 0.409 removed	KJ	



APICAL INDUSTRIES, INC.
dba DART AEROSPACE

TRANSACTION CODES (TC):
A-ADD C-CREATE
R-REVISE D-DELETE

ENGINEERING CHANGE NOTICE NO.

05360

SHEET 1 OF 1

DWG NO. 646.9700

REV: D

PREPARED BY J. BECKER

DATE: 03/24/16

EFFECT ON DWG
☐ INC. ☒ UNINC.

DWG TITLE: CUTTER SUB ASSY

APPROVED BY: ENGR

MFG

QC

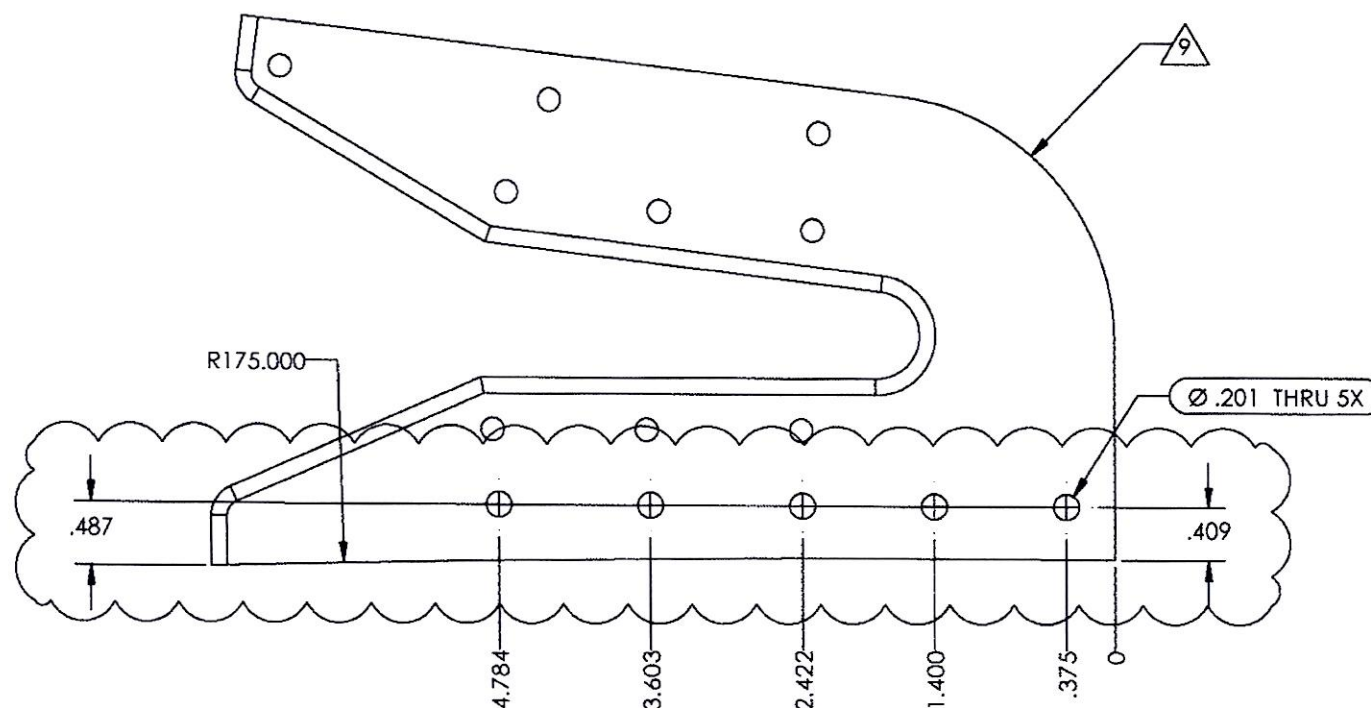
EFF. CURRENT ORDER

REASON: REVISED DIMENSIONS

ECR: N/A

ACTION ITEM:
1.

SHEET 7, ZONE C3 IS:



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER

NO. 163298 MJS
120703

DOCUMENTS EFFECTED:

☐ PATTERN ☐ MDL ☐ INSTALL INSTRUCTIONS ☐ ICA ☐ FMS ☐ BOM

CHANGE CATEGORY

☐ MAJOR ☒ MINOR

DER REVIEW REQUIRED

☐ YES ☒ NO

DART
AEROSPACE

APICAL INDUSTRIES, INC.
dba DART AEROSPACE

TRANSACTION CODES (TC):
A-ADD C-CREATE
R-REVISE D-DELETE

ENGINEERING CHANGE NOTICE NO.

05345

SHEET 1 OF 1

DWG NO. 646.9700

REV: D

PREPARED BY J. GARDINER

DATE: 03/15/16

EFFECT ON DWG
☐ INC. ☒ UNINC.

DWG TITLE: CUTTER SUB ASSY

APPROVED BY:

ENGR.

MFG

QC

EFF.

CURRENT ORDER

REASON: REVISED NOTES

ECR:

N/A

ACTION ITEM:

1.

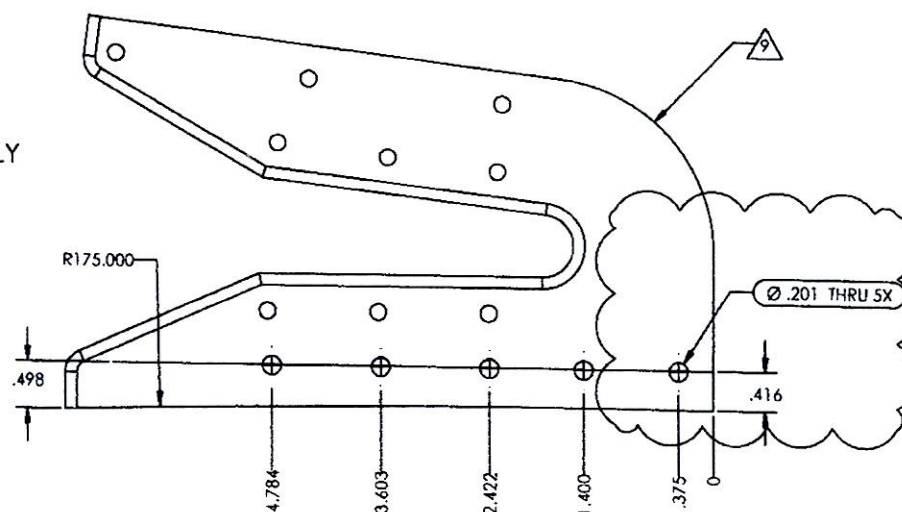
SHEET 1, ZONE A6 IS:

NOTES:

IS

- 1 MATERIAL: ALUMINUM 7075-T651 PER AMS-QQ-A-250/12
- 2 FINISH IAW MPP-172 SECTION 2.1, 3.3 & 4.3.
- 3 MATERIAL: AISI A2 TOOL STEEL
CONDITION: ANNEALED
POST PROCESS: HEAT TREAT TO 58-62 Rc ROCKWELL HARDNESS
- 4 FINISH: PRIME IAW MPP-172 SECTION 3.3; 1-2 MIL MAX
5. DEBURR AND BREAK ALL SHARP EDGES EXCEPT WHERE OTHERWISE NOTED
6. IDENTIFY IAW MPP-120
- 7 APPLY F/N 5 AS REQUIRED TO ALL FAYING SURFACES OF F/N 2 UPON ASSEMBLY
- 8 CUTTING EDGE INTENDED TO BE SHARP, DO NOT BREAK SHARP EDGE
- 9 ALL DIMENSIONS NOT SPECIFIED ARE CONTROLLED BY 646.9710.

SHEET 7, ZONE C5 IS:



DOCUMENTS EFFECTED:

☐ PATTERN ☐ MDL ☐ INSTALL INSTRUCTIONS ☐ ICA ☐ FMS ☐ BOM

CHANGE CATEGORY

☐ MAJOR ☒ MINOR

DER REVIEW REQUIRED

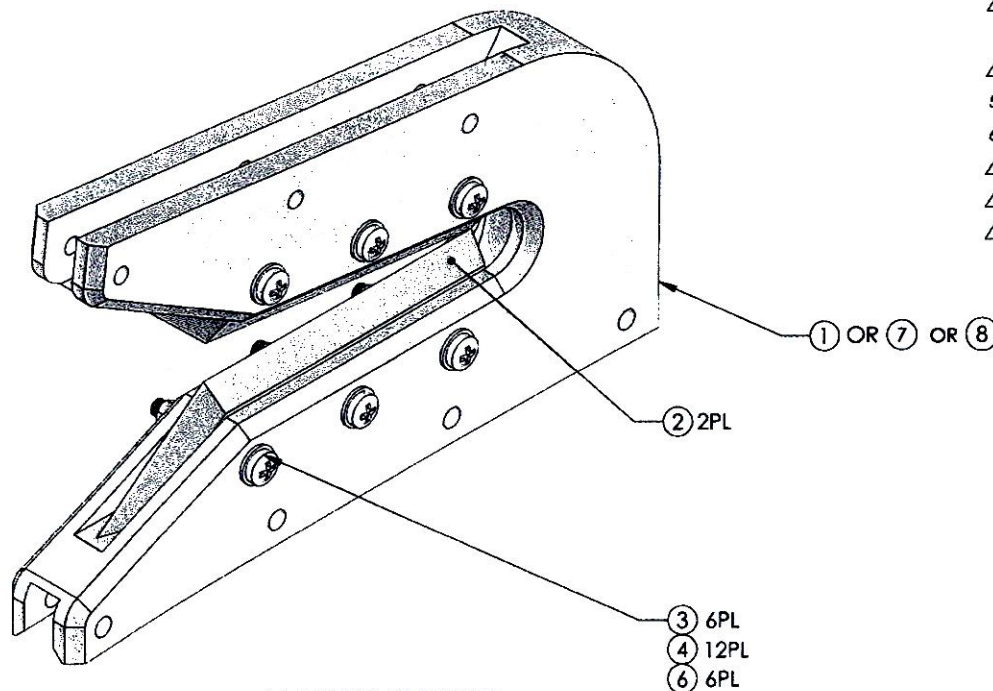
☐ YES ☒ NO

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REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
MC	LAST PROTOTYPE REVISION #102		MC
MC	RELA. RELEASE	02/29/09	P. BRAVO
A	INCORPORATED ECN 02744 03038 03/12	04/04/13	P. BRAVO
B	INCORPORATED ECN 03947	07/03/13	P. BRAVO
C	INCORPORATED ECN 04039	08/09/13	P. BRAVO
D	INCORPORATED ECN 05329	02/24/16	P. BRAVO

NOTES:

- 1 MATERIAL: ALUMINUM 7075-T651 PER AMS-QQ-A-250/12
- 2 FINISH IAW MPP-172 SECTION 3.3 & 4.3.
- 3 MATERIAL: AISI A2 TOOL STEEL
CONDITION: ANNEALED
POST PROCESS: HEAT TREAT TO 58-62 Rc ROCKWELL HARDNESS
- 4 FINISH: PRIME IAW MPP-172 SECTION 3.3; 1-2 MIL MAX
5. DEBURR AND BREAK ALL SHARP EDGES EXCEPT WHERE OTHERWISE NOTED
6. IDENTIFY IAW MPP-120
- 7 APPLY F/N 5 AS REQUIRED TO ALL FAYING SURFACES OF F/N 2 UPON ASSEMBLY
- 8 CUTTING EDGE INTENDED TO BE SHARP, DO NOT BREAK SHARP EDGE
- 9 ALL DIMENSIONS NOT SPECIFIED ARE CONTROLLED BY 646.9710.



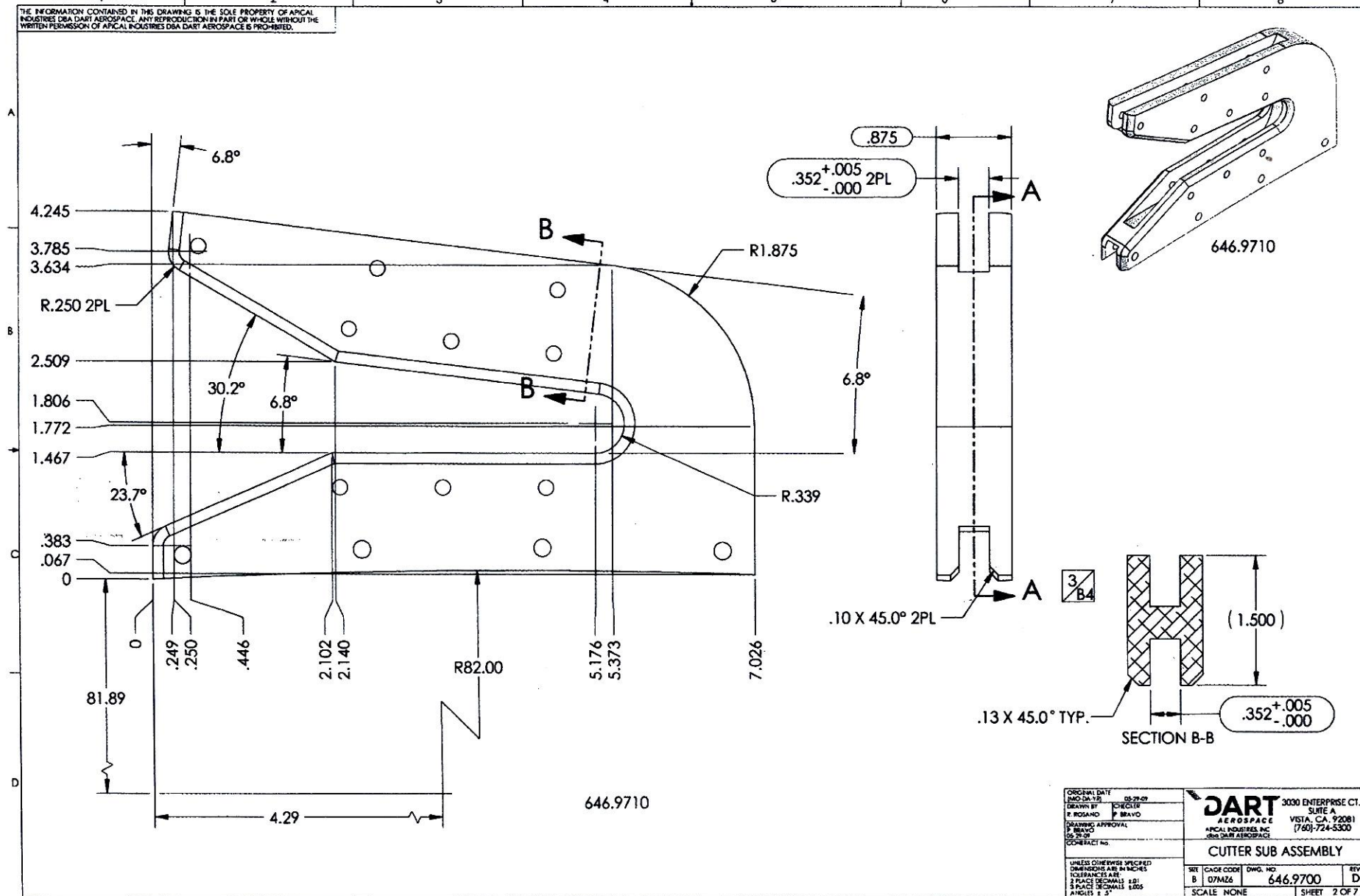
646.9701 SHOWN
646.9702 & 646.9703 TYP

UNINCORPORATED ECN(S)

05345, 05360,

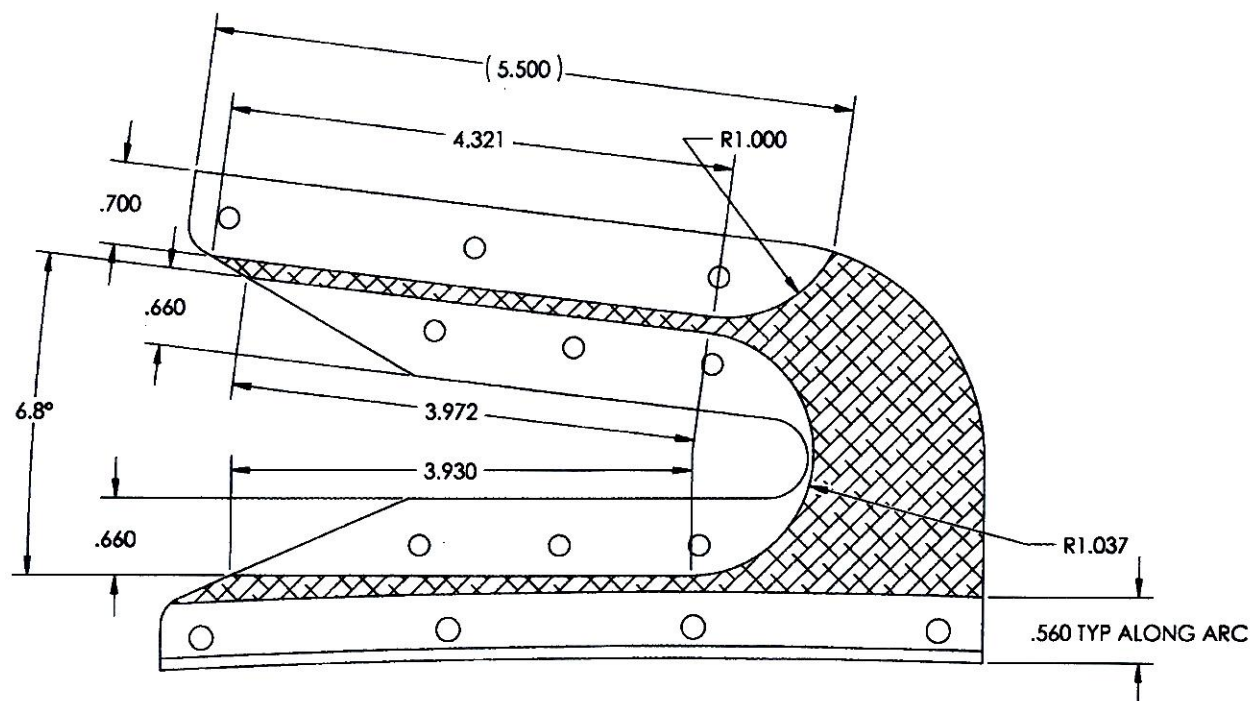
1			8	646.9713	BODY			
	1		7	646.9712	BODY			
6	6	6	6	601.1541	LOCKNUT	MS21042LDB		
A/R	A/R	A/R	5	601.2045	RTV, LOCTITE 598			
12	12	12	4	601.2764	WASHER	NAS1149PHE3P		
6	6	6	3	601.2765	SCREW	MS27039-0819		
2	2	2	2	646.9711	BLADE			
			1	646.9710	BODY			
X				646.9703	CUTTER SUB ASSY			
	X			646.9702	CUTTER SUB ASSY			
		X		646.9701	CUTTER SUB ASSY			
APD	9702	9701	FIND #	PART #	DESCRIPTION	MATL	SPEC.	
QTY				PARTS LIST				
NEXT ASSY (S)				ORIGINAL DATE 05-29-09 DRAWN BY J. ROSSHO CHECKED P. BRAVO DRAWING APPROVAL P. BRAVO CONTRACT NO.				
646.9600				UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS .001 3 PLACE DECIMALS .0005 ANGLES ± .5°				
				DART 3030 ENTERPRISE CT. SUITE A VISTA, CA. 92081 (760)-724-5300 APICAL INDUSTRIES, INC. DBA DART AEROSPACE CUTTER SUB ASSEMBLY				
SMT	CA01 C001	DWG. NO.	REV.					
B	07M426	646.9700	D					
SCALE NONE				SHEET 1 OF 7				

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1 2 3 4 5 6 7 8

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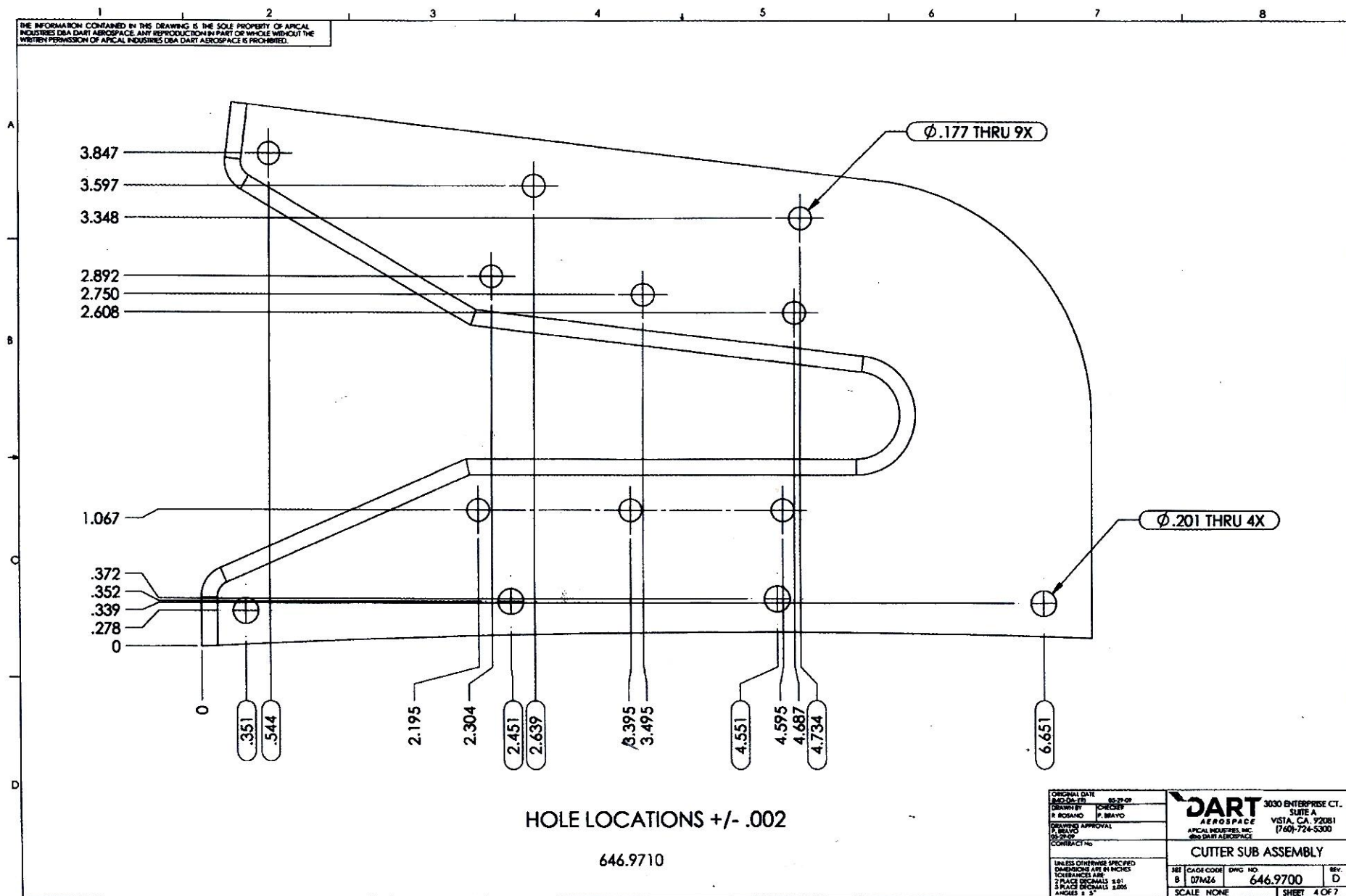


SECTION A-A $\frac{2}{C6}$

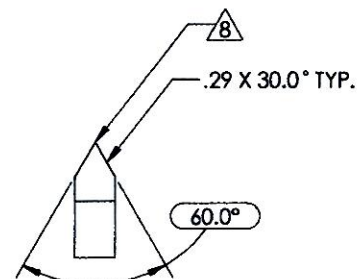
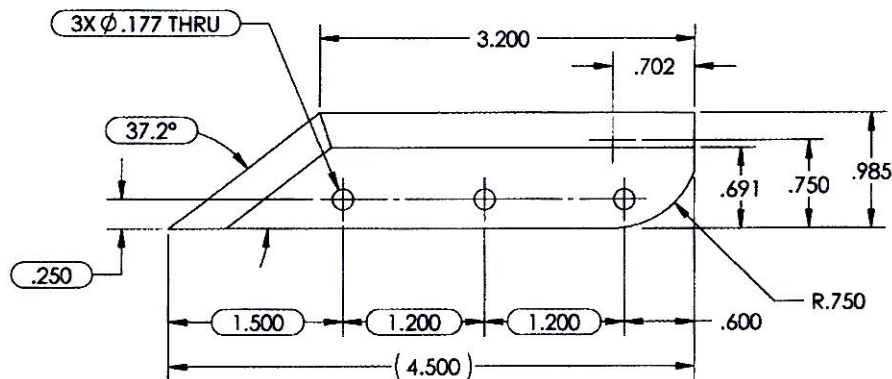
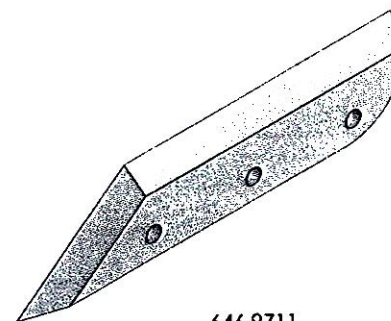
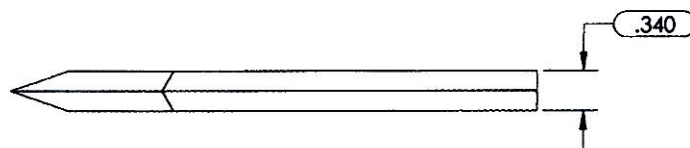
646.9710

ORIGINAL DATE UNCLASSIFIED 05-29-04		3030 ENTERPRISE CT., SUITE A VISTA, CA 92081 (760)-724-5300	
DRAWN BY R. ROSANO	CHECKED P. BRAVO	DART AEROSPACE	
DRAWING APPROVAL P. BALVO	DATE 05-29-04	APICAL INDUSTRIES INC. DBA DART AEROSPACE	
CONTRACT NO.		CUTTER SUB ASSEMBLY	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 3 PLACE DECIMALS ±.01 2 PLACE DECIMALS ±.005 ANGLES ± .5°	REV B	CAGE CODE 07M26	DWG. NO. 646.9700
SCALE NONE		REV D	
		SHEET 3 OF 7	

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APCAL INDUSTRIES DBA DART AEROSPACE. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF APCAL INDUSTRIES DBA DART AEROSPACE IS PROHIBITED.



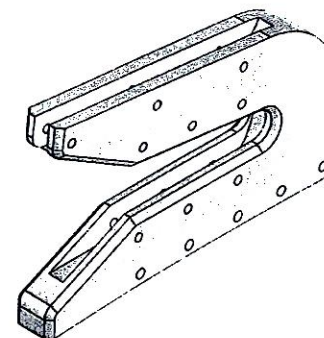
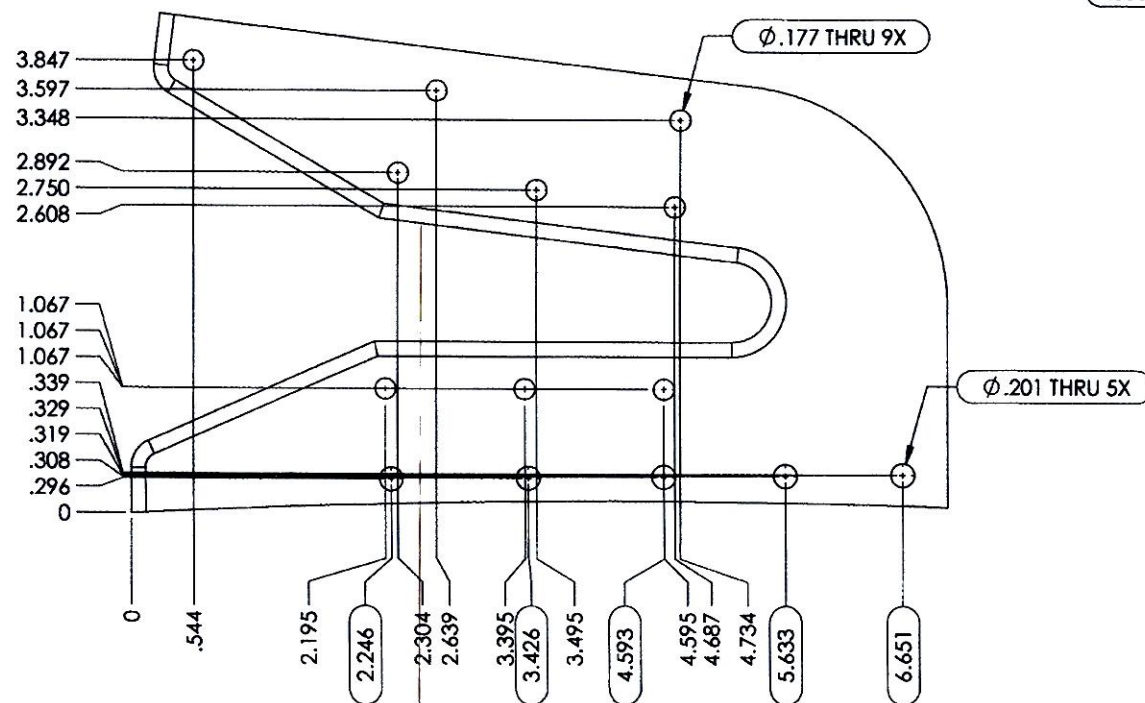
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APICAL INDUSTRIES DDA DART AEROSPACE. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF APICAL INDUSTRIES DDA DART AEROSPACE IS PROHIBITED.



646.9711

ORIGINAL DATE: 03-22-09		3030 ENTERPRISE CT., SUITE A	
DRAWN BY: CHICKER		VISTA, CA 92081	
IN: ROSANO		(760)-724-5300	
DRAWING APPROVAL: P. BLAWO		APICAL INDUSTRIES INC.	
03-25-09		DART AEROSPACE	
CONTRACT NO:		CUTTER SUB ASSEMBLY	
SIZE: B	CAGE CODE: 07426	DWG. NO: 646.9700	REV: D
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.01 3 PLACE DECIMALS ±.005 ANGLES ± .5°		SCALE: NONE	SHEET: 5 OF 7

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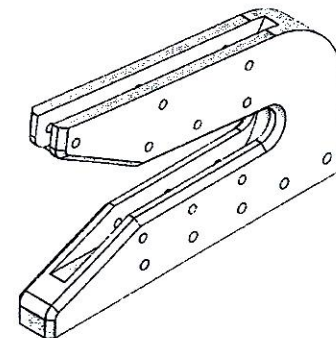


646.9712 9

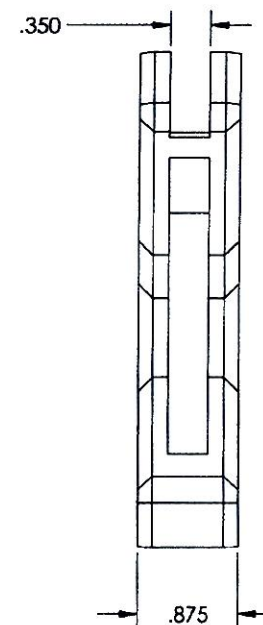
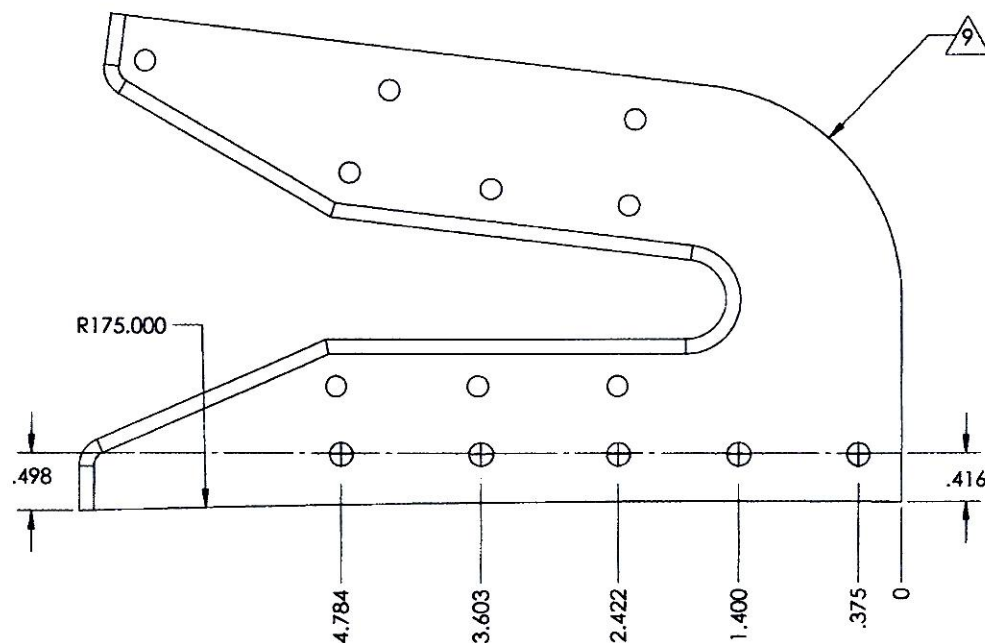
646.9712

ORIGINAL DATE 05-28-09		DART AEROSPACE		3030 ENTERPRISE CT., SUITE A	
DRAWN BY R. ROSARIO		CHECKED P. BRAVO		VISTA, CA. 92081	
DRAWING APPROVAL P. BRAVO		APICAL INDUSTRIES, INC.		(760) 724-5300	
CONTRACT NO.		CUTTER SUB ASSEMBLY			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.01 3 PLACE DECIMALS ±.005 ANGLES ±.5°		REV 8	CAGE CODE 07M26	DWG. NO. 646.9700	REV D
		SCALE NONE		SHEET 6 OF 7	

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646.9713



ORIGINAL DATE: 05-29-08		DART AEROSPACE 3030 ENTERPRISE CT., SUITE A VISTA, CA 92081 (760)-724-5300	
DRAWN BY: CHUCKER		APICAL INDUSTRIES INC. (DBA) DART AEROSPACE	
P. ROSA NO. 05-29-08		CUTTER SUB ASSEMBLY	
DRAWING APPROVAL: 05-29-08		SEE CAGE CODE DWG NO. 646.9700 REV. D	
CONTRACT NO.		SCALE: NONE SHEET 7 OF 7	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES ARE: 1. FRACTIONS ±.01 2. DECIMALS ±.005 3. ANGLES ±.5°			

Jean Francois Sauve

From: Pablo Bravo
Sent: July-17-17 12:17 PM
To: Jean Francois Sauve; Jason Gardiner
Subject: RE: 646.9710

JF,

The part should be okay to use. The design intent is to have the slot centered; I think that's why we had the dimension centered in the drawing view. We'll add a callout on the next revision of the drawing for clarity.

Thanks,

Pablo

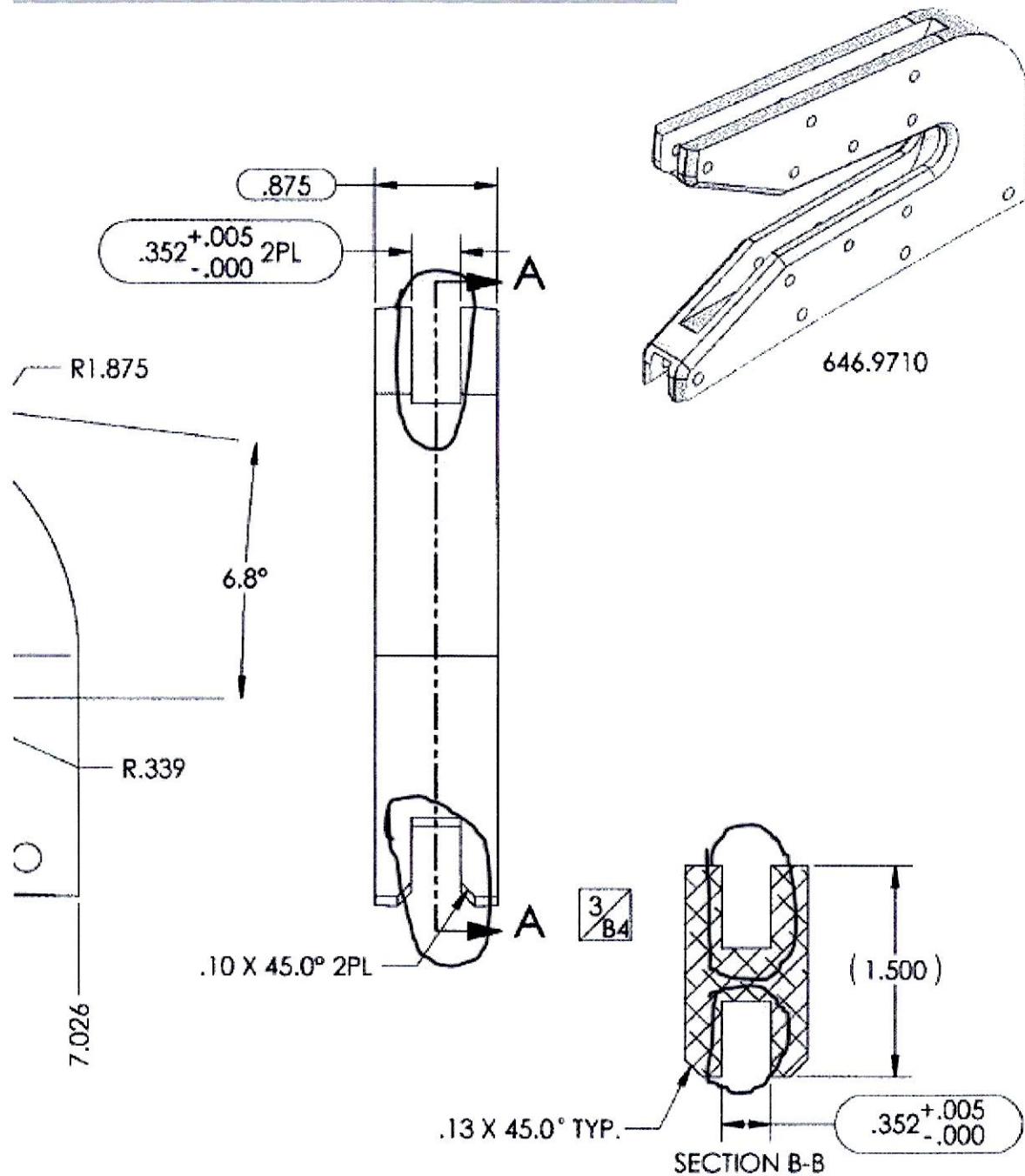
From: Jean Francois Sauve
Sent: Monday, July 17, 2017 9:03 AM
To: Pablo Bravo <pbravo@dartaero.com>; Jason Gardiner <jgardiner@dartaero.com>
Subject: 646.9710

Hi Guys,

The slots on 646.9710 is off center by 0.006". One part is affected.

There is no tolerance on the dwg. for the slot to be center location. Is it

FOR REFERENCE ONLY AND IS UNCONTROLLED



acceptable?

Thanks

JEAN-FRANÇOIS SAUVÉ
Production Engineering Coordinator

DART AEROSPACE
T 1 613 632-5200 > 237
F 1 613 632-5246
1 800 556- 4166
www.dartaerospace.com



A.T.G. Industries Inc.
731 Industrielle Street
Rockland, ON K4K 1T2
Canada

Ph: (613) 446-4544

-Fax: (613) 446-4556

Pack List

Number: 913718

Date: 18-Aug-17

To

Dart Aerospace Ltd
1270 Aberdeen St
Hawkesbury, ON K6A 1K7

Ship To

Chantal Lavoie
Dart Aerospace Ltd
1270 Aberdeen St
Hawkesbury, ON K6A 1K7

Ph: 613 632-9577

Fax: 613 632-1053

Ph: 613 632-9577

Fax: 613 632-1053

Terms		Ship Via	
Quantity	Description		
	Please reference this document's Pack List number on all correspondences regarding this shipment. If you have any questions, please contact us.		
8 ea	Part: 646.3110 Channel Hard Black Anodize per MIL-A-8625F, Type III, Class 2, .0005-.0045" (.5 - 4.5mils) Prime per MIL-PRF-23377, Type I, Class N (Customer Supplied), .0006-.0009" (.6 - .9 mils) per drawing. Job: 21444	Rev: N/C	PO: PO37223 Line: 1
6 ea	Part: 647.1510 Upper Deflector Hard Black Anodize per MIL-A-8625F, Type III, Class 2, .0005-.0045" (.5 - 4.5mils) Prime per MIL-PRF-23377, Type I, Class N (Customer Supplied), .0006-.0009" (.6 - .9 mils) per drawing. Job: 21446	Rev: D	PO: PO37223 Line: 3
11 ea	Part: 646.9710 Body Hard Black Anodize per MIL-A-8625F, Type III, Class 2, .0005-.0045" (.5 - 4.5mils) Prime per MIL-PRF-23377, Type I, Class N (Customer Supplied), .0006-.0009" (.6 - .9 mils) per drawing. Job: 21447	Rev: D	PO: PO37223 Line: 4
CERTIFICATE OF CONFORMANCE A.T.G Industries Inc. certifies that all items in this shipment conform to the requirements. Date: <u>18/8/17</u> Certified Signature: <u>[Signature]</u> Receiver Signature: _____ A.T.G Industries Inc. is AS9100 Registered and Nadcap Chemical Processing Accredited. Note: This Packing Slip may contain parts that have been PLATED. Items that are plated may be subject to natural tarnishing and it is suggested that they be inspected within 24 hours of Made in Canada.			

DAS
38
9-89

AUG 18 2017

Dart Aerospace Ltd.

Purchase Order ID **PO37223**

DART
AEROSPACE

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO37223**

Purchase Order Date 7/26/2017

PO Print Date 7/28/2017

Page Number 2 of 8

Order From :

A.T.G. INDUSTRIES INC.
731 INDUSTRIELLE ROAD
ROCKLAND, ON K4K 1T2
CANADA

VC-ATG001

Ship To : DART AEROSPACE LTD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name

Vendor Phone 613-446-4544

Ship To Contact

Ship To Phone

Ship Via: VENDOR'S TRUCK

Ship Acct:

Buyer

Customer POID

Customer Tax # 10127-2607

Terms

Net 30

Currency

CAD

FOB

FCA - (Free Carrier)

Line Total:

\$0.

4 163298

646.9710 Body

7/26/2017

11.00

Yes

7/26/2017

Hard anodize as per Dwg 646.9700 Rev D2

Line Total:

\$0

5 163487

647.4113 Clip

7/26/2017

11.00

Yes

7/26/2017

Hard anodize as per Dwg 647.4100 Rev N/C

Line Total:

\$0

6 163637

D5046-047 Co-Pilot
Collective Head Assembly

7/26/2017

2.00

Yes

7/26/2017

Black Anodize as per
Dwg D5046 Rev B

Line Total:

\$0

PO Instructions: PRIMER IS SUPPLIED BY DART

Note:

7/28/2017

AUG 18 2017

SEP